Before the
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D.C. 20554

In the Matter of	)	
	)	MB Docket No. 07-172
Amendment of Service and Eligibility Rules	)	RM-11338
for FM Broadcast Translator Stations	)	

Comments of
Samuelson-Glushko Technology Law and Policy Clinic, University of Colorado School of Law

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Executive Summary

The Samuelson-Glusko Technology Law and Policy Clinic ("TLPC")[1] at the University of Colorado School of Law recommends that the FCC allow AM broadcasters to use FM translators for fill-in service.[2] This rule change will ameliorate the effect of extended daylight savings time on AM broadcasters, promote radio program diversity at night, and further increase the viability of the AM band. Since all AM broadcasters—except clear channel stations—are required to reduce power or cease broadcasting at night due to propagation characteristics of AM signals, many listeners cannot receive these signals during nighttime hours. During late fall and early spring daylight savings time, it is often dark in most of the U.S. during the early morning drive-time. Thus, most AM broadcasters cannot reach a large portion of their listener-audience during these times for reasons other than sound public policy. Allowing AM broadcasters to use FM translators for fill-in service will allow them to reach many more of these listeners during nighttime hours than currently possible. Increasing the number of

[1] University of Colorado law students, David B. Wilson and Django H. Andrews prepared these comments as part of their work with the Samuelson-Glushko Technology Law and Policy Clinic ("TLPC") at the University of Colorado School of Law. The Samuelson-Glushko Technology Law & Policy Clinic at the University of Colorado School of Law has a two fold mission: (i) to train and produce students equipped to conduct thoughtful policy analysis, and (ii) to provide unbiased assistance in the public interest concerning technology issues to regulatory entities, courts, legislatures and standard-setting bodies. For more information about the clinic, see University of Colorado School of Law, Technology and Policy Clinic, http://www.colorado.edu/law/clinics/tech (last visited Jan. 6, 2008). Mr. Wilson and Mr. Andrews wish to thank Brad Bernthal, Dale Hatfield, Phil Weiser, Paul Ohm, Jill Vanmatre, fellow TLPC clinic participants, and TLPC guest speakers for their insight and input, which helped the authors shape and refine these comments.

[2] *See* Amendment of Service and Eligibility Rules for FM Broadcast Translator Stations, *Notice of Proposed Rule Making*, FCC 07-144, MB Dkt. No. 07-172 (Aug. 15, 2007), *available at* http://gullfoss2.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=6519817315.

broadcasts available to listeners at night expands the diversity of voices during these times and therefore improves the viability of the AM band.

However, several rule modifications will be necessary in order for the proposed rules to be effective:

- The FCC needs to provide effective notice to AM broadcasters regarding potential problems they might face using FM translators;
- The FCC must address the excessive number of existing FM translator applications, which a handful of entities presently hold, along with providing clear prioritization rules for conflicting FM translator applications; and
- The FCC should require AM broadcasters to maintain the signal quality of standard FM broadcasts.

The TLPC analysis begins with a non-commercial radio station case study, which is used to help highlight several issues that may arise in allowing AM broadcasters to rebroadcast their signals using FM translators ("AM/FX"). Key concerns are that spectrum is available for AM/FX and the issues regarding FM translators having to shut down if they interfere with primary FM broadcasters, regardless of a FM translator being first in time.

Recommendation I

The FCC needs to provide effective notice to AM broadcasters regarding potential problems they might face using FM translators.

Based on the issues that became apparent with the case study, an examination of the status of FM spectrum usage in Colorado was conducted. Three areas were

analyzed: (1) urban FM spectrum usage along Colorado's Front Range; (2) rural FM spectrum usage in the southwestern part of Colorado; and (3) state-wide FM translator usage. The key results show that there is spectrum available for AM/FX in both urban and rural parts of Colorado; however, it would be much easier for AM broadcasters to attain spectrum in rural communities. More importantly, the urban and state-wide analyses reveal that there are presently an excessive number of applications for FM translator licenses. A few entities have filed the majority of these applications. The AM/FX proposed rules need to address the apparent abuse of FM translator applications, along with creating clear prioritization rules if AM/FX is to succeed.

Recommendation II

The FM translator rules should be amended to contain clear prioritization rules if AM/FX is to succeed. AM/FX should be treated the same as FM/FX.

Recommendation III

The FCC should limit the number of FM translator licenses any given primary broadcast station may have to a total of ten, regardless of whether they are an AM or FM broadcaster. FM translator licenses should also be limited to actual radio broadcasters.

Through the case study, it is apparent that there is a sound quality issue that the AM/FX NPRM has failed to consider. FM signals have a broader dynamic range and frequency response than AM signals, resulting in better

sound quality—especially when broadcasting music. Furthermore, AM signals are uniquely prone to atmospheric and electrical interference. In order to maintain the sound quality of the FM band, AM broadcasters using FM translators should not be allowed to use traditional over-the-air means of receiving their broadcast signal at their translators; instead, they should be required to use non-aural terrestrial transmission facilities, such as microwave links or wire/cable connections.

Recommendation IV

AM stations should be required to send an FM quality signal to any FM translator they utilize, rather than rebroadcasting their over the air AM quality signal.

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I. Case Study of KGNU in Boulder, Colorado[3]

The TLPC analysis begins with a preliminary investigation into the history of a radio station based in Boulder, Colorado – KGNU. This community-based non-commercial educational ("NCE") radio station broadcasts on both FM (at 88.5 MHz) and AM (at 1390 KHz) and has extensive experience using FM translators. KGNU's history reveals several important issues that may impact the effectiveness of the proposed rules (the "NPRM") that would allow AM radio stations to broadcast using FM translators ("AM/FX").

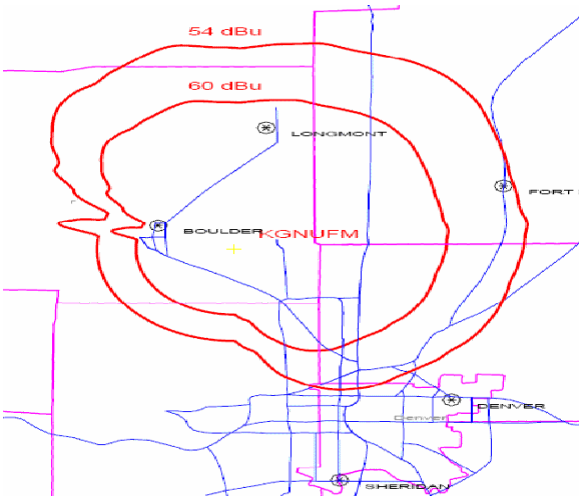

Figure 1. Broadcast 60 dBu and 54 dBu contours for KGNU FM in Boulder, CO.

KGNU began broadcasting in 1978 at 88.5MHz. While originally licensed to broadcast at a higher power, KGNU had to reduce its broadcast power to 1300 watts in order to avoid interference with TV channel 6, a problem that has faced many non-commercial broadcasters located on the left end of the FM dial. This

[3] The information for this case study was mostly acquired from KGNU's website. *See* KGNU – our signal, http://kgnu.org/ht/signal.html (last visited Nov. 26, 2007). Additional information was gathered from telephone interviews with the present and former station managers. The personal knowledge of one of the authors of these comments, David Wilson, was also used. Mr. Wilson was a volunteer at KGNU from 1994 to 2006.

lower power level effectively limited KGNU's primary signal to reaching Boulder and its immediately surrounding communities; see KGNU's FM Signal Contour above. As a result, KGNU has long sought to reach other communities using either FM translators or, more recently, the acquisition of an AM radio station.

Because KGNU is a non-commercial radio station, under present FM translator rules, it can use these rebroadcasting devices to reach outside its primary contour. In contrast, commercial broadcasters are limited to using translators to fill-in signal voids within their primary contour. KGNU has used FM translators to rebroadcast its signal in the Fort Collins community, located 50 miles north of Boulder, and to reach the mountain communities of Ward and Nederland, located 20 miles west of Boulder.

While KGNU continues to rebroadcast in Nederland using an FM translator at 93.7 MHz FM with translator K229AC, KGNU is no longer able to use its translator in Fort Collins. Notably, the history of KGNU's Fort Collins translators shows several of the problems that any FM translator user could potentially face.

In 1992, KGNU started rebroadcasting its signal in the Fort Collins area at 99.9 MHz FM. However, in 2001, it had to turn off this translator because of interference it was causing for KKPL, a new radio station broadcast from Wyoming to the north.[4] KGNU then received a license to use an FM translator at 89.1 MHz. In 2005, the Education Media Foundation ("EMF") began broadcasting in Fort Collins at 88.3 MHz using a mere 90 watts, a power more

[4] Primary FM broadcasters have priority over FM translators, even if the translator was in use before the new FM broadcaster went on the air. *See* FM Translator and FM Booster Stations Audio Division (FCC) USA, Interference Caused, http://www.fcc.gov/mb/audio/translator.html#IX (last visited Nov. 27, 2007).

typical of an FM translator although the station is fully licensed as a primary FM broadcast station. Despite EMF's low broadcasting power, its signal was strong enough and near enough to KGNU's primary signal that KGNU's Fort Collins translator was unable to pick up KGNU's 88.5 MHz signal to rebroadcast it. Because FM translators have no priority compared to primary broadcasters, KGNU had no basis to complain about EMF's signal, despite the fact that EMF's signal effectively made KGNU's translator useless. In 2005, KGNU chose to turn of its translator.

KGNU's translator experience points out several issues that will motivate the following analysis that should impact the AM/FX NPRM in order to make these proposed rules more effective. Most notably, the FCC should provide clear notification to AM stations that FM translators have the lowest priority when it comes to potential interference problems with other FM broadcasters. FM translators are thus susceptible to being shut down if they cause any interference to primary FM broadcasters, regardless of the fact that the primary FM broadcasters may have gone on the air after the FM translator was put into use. As can be seen with KGNU's experience, this has resulted in KGNU having to look for different frequencies for their Fort Collins FM translator. Furthermore, weak nighttime AM signal strength will also cause comparable problems for AM broadcasters using FM translators as KGNU has faced trying to rebroadcast in Fort Collins. As will be discussed more below, the TLPC recommends that AM broadcasters use other means besides rebroadcasting of their over-the-air AM signal to reach an FM translator, which would address this problem.

Recommendation I

The FCC needs to provide effective notice to AM broadcasters regarding potential problems they might face using FM translators.

To provide effective notice, we propose that a notice section be added to the FM translator license application form summarizing in plain language the very low priority of FM translators with regard to interference and the consequences of causing interference with a primary broadcast signal. The notice should be prominently displayed and so that all broadcasters may easily become aware of the inherent risks. Further, the notice should reference the specific applicable rules and regulations so that broadcasters may make a more thorough inquiry into the matter before applying for a translator license. We believe that a notice of this type will help ensure the viability of AM broadcasters and help to reduce the number of translator applications, which has become excessive.

While KGNU has experience using FM translators to rebroadcast their primary FM signal, it could potentially take advantage of AM/FX NPRM because it is now also an AM broadcaster. In 2004, KGNU purchased KJME, an AM radio station broadcasting at 1390 KHz in Denver. As a result, KGNU-AM might be able to take advantage of rules that come out of the AM/FX NPRM. Like most other AM radio stations, KGNU-AM has to reduce its power at nighttime, dropping from 5000 watts during the day, to 139 watts at night.

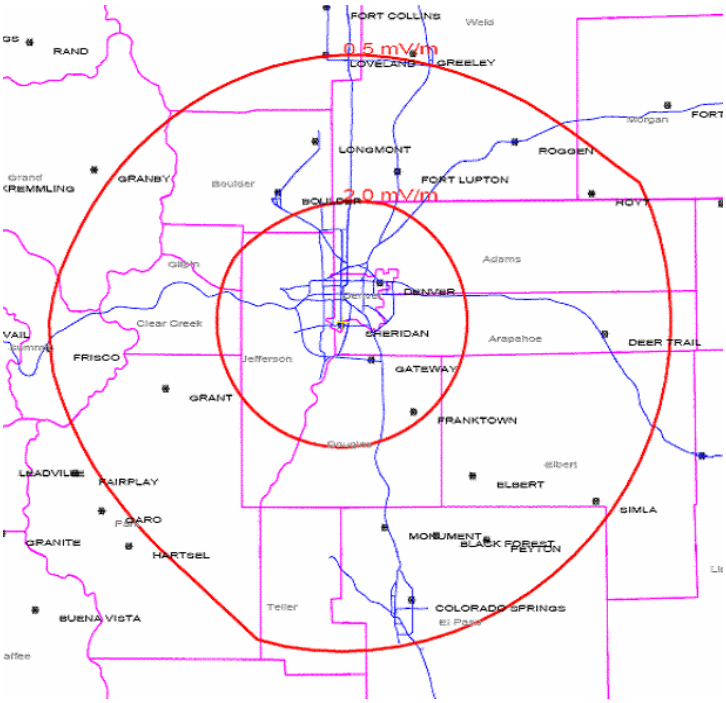

Figure 2. Daytime broadcast 2.0 mV/m and 0.5 mV/m contours for KGNU AM in Denver, CO.

In discussions with KGNU staff members, they have expressed interest in the proposed AM/FX rules, but were concerned that there was no FM spectrum available in the Denver area to use an AM/FM translator. Much of the subsequent analysis in these comments looks further into this issue to determine the actual state of the FM spectrum usage in Colorado to see whether stations like KGNU and other AM broadcasters will be able to use FM translators. Furthermore, this analysis reveals several other issues regarding FM translators that will need to be addressed in by the AM/FX NPRM.

II. Colorado FM "Spectrumscape" Analysis

The TLPC analysis continues with an examination of the state of FM spectrum usage in Colorado. This analysis sheds more light on the issues that stations like KGNU face with using FM translators, either as FM or AM

broadcasters. In addition, this analysis of spectrum usage and the potential of AM/FX provide important insights for other communities across the U.S. Colorado has diverse communities, both demographically and geographically. Colorado's diverse communities are representative of many parts of the U.S., allowing this analysis to have relevance to many areas beyond Colorado.

Using the FCC's FMQ FM Radio database[5], we extracted data relevant to the use of FM spectrum within Colorado. We examine several subsets of the data, addressing three broad areas. First, this analysis looks at FM spectrum usage along the Front Range of Colorado, where most of the state's population resides and where KGNU provides primary broadcasts in two communities, Boulder and Denver. We then look at a more rural mountainous community, centered on Durango, Colorado, located in the southwestern part of the state. For each of these, we examine how the FM spectrum is being used, with respect to FM and FX licenses, along with examining applications for each of these categories. Finally, we consider the statewide patterns of FX usage, examining the entities which hold licenses or have applied for licenses.

a. Urban Spectrumscape – Colorado Front Range Analysis

The FM dial is crowded along the Front Range of Colorado where KGNU broadcasts. Many FM channels have a primary broadcaster or translator. However, there is some spectrum available in different communities, depending on whether a broadcaster's primary signal contour reaches into the community or if there is an existing FM translator within the community. This is seen through

[5] *See* FM Query – FM Radio Technical Information – Audio Division (FCC) USA, FMQ FM Radio Database Query, http://www.fcc.gov/mb/audio/fmq.html (last visited Nov. 23, 2007).

the proliferation of FX applications along the Front Range. Figures 3 and 4 show how FM spectrum is presently licensed for both primary FM station and FM translator use ("LIC-FM" & "LIC-FX" respectively), along with existing applications ("APP – FM" & "APP-FX"); the FM dial is broken into two frequency band segments (Figure 3 = 88.1- 97.9 MHz; Figure 4 = 98.1-107.9 MHz).

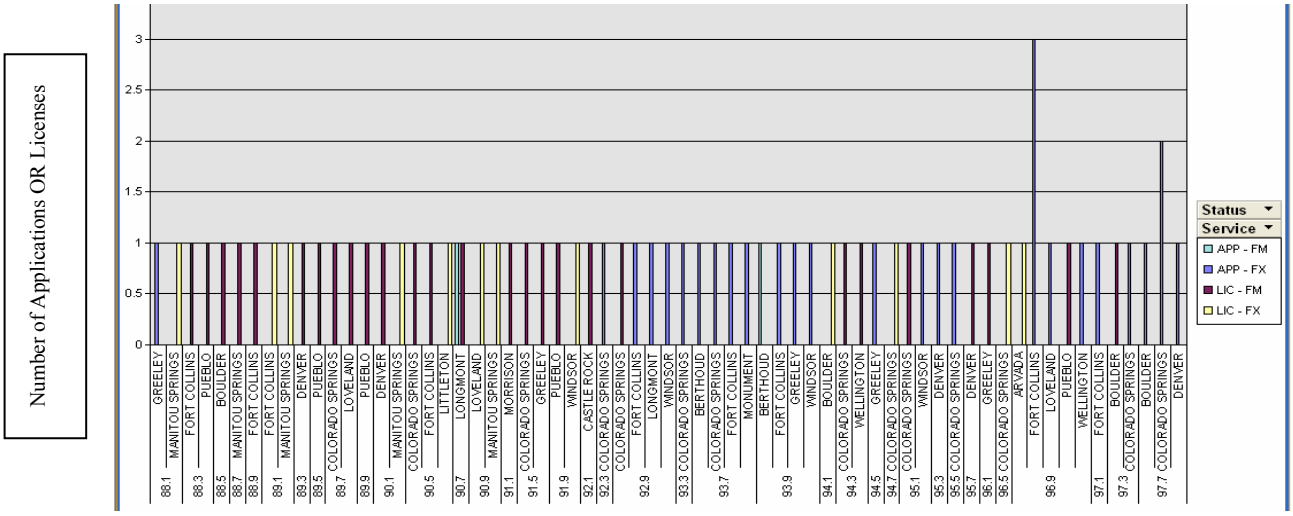

Figure 3. Front Range FM Spectrum - 88.1 FM to 97.7 FM Perspective.

Reading across the frequencies and communities of Figures 3 and 4, one can see where multiple parties may be using or vying for the use of a specific frequency when a channel has multiple entries. Sometimes the communities for which an entity is seeking or has a license are far enough away from each other that there are no interference issues. For example, at 89.1 MHz in Figure 3 above, there are licensed translators in Fort Collins and Manitou Springs; these communities are far enough away from each other that no interference problems arise. Reading across the Figure 4 below, one can find where there are frequency conflicts within a given community when a spike on the graph appears. For

example, at 104.7 MHz, there are three entities seeking FM translators in the Denver area. Applications also exist at that same frequency for the communities of Castle Rock, Longmont, and Loveland.

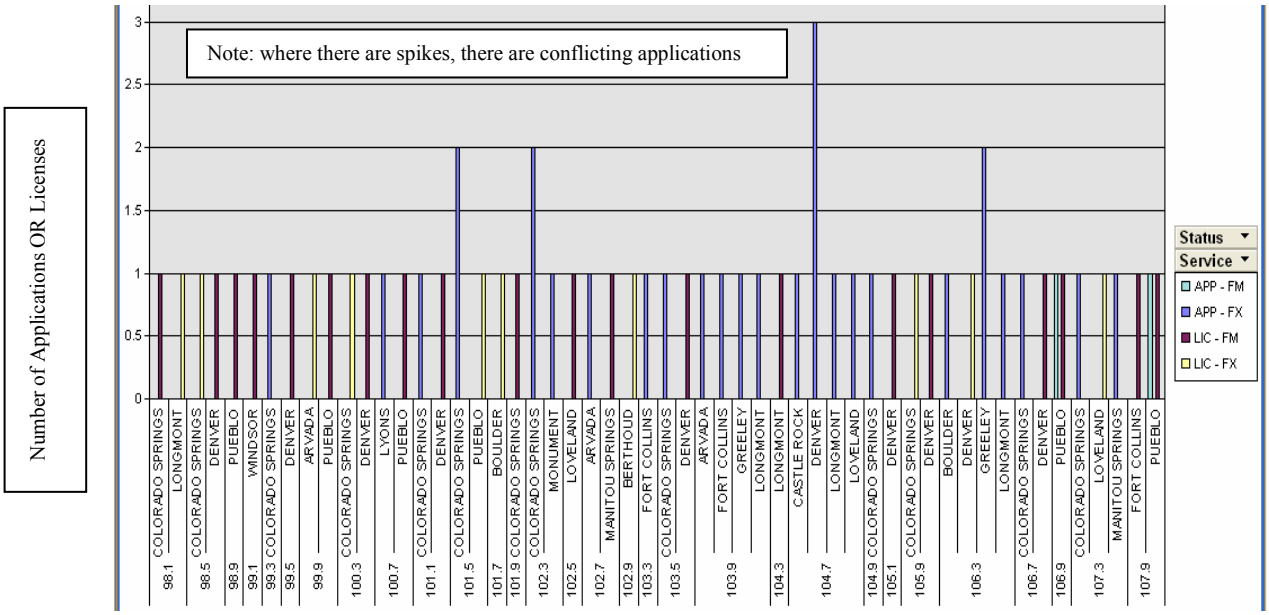

Figure 4. Front Range FM Spectrum - 98.1 FM to 107.7 FM Perspective.

In order to gain further insight into the patterns of FM spectrum usage along the Front Range of Colorado, we also examine the same data as used in Figures 3 and 4 from a community-based perspective; see Figure 5 below. Most of the FM radio stations are in Denver, Colorado Springs, and Pueblo. FM translators are found in abundance in Colorado Springs and Fort Collins. Existing FX applications are located mainly in Colorado Springs, Fort Collins, Greeley, and Denver. Of particular note is the large number of FM translator applications in Colorado Springs; we will address this observation in greater detail later in this analysis.

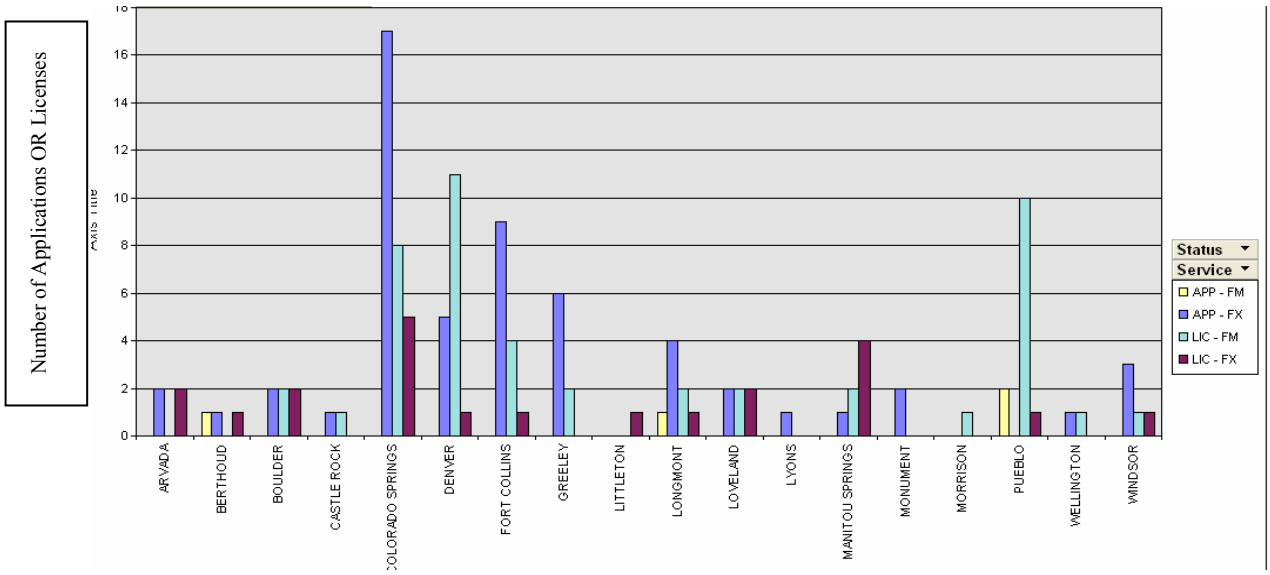

Figure 5. Front Range FM Spectrum - Community Perspective.

Figures 3, 4, and 5 show that there is apparently FM spectrum available that urban AM radio stations, like KGNU, could utilize for broadcasting using FM translators. However, most of this available spectrum presently has existing applicants who are seeking to use that spectrum for an FM translator. The AM/FX NPRM needs to address this issue of potential conflicts between applicants for FM translators at a given frequency in a given community.

The present FCC rules regarding conflicting FM translator applications state that fill-in translators have priority over other translator applications.[6]

[6] *See* FM Translator and FM booster Stations Audio Division (FCC) USA, Conflicting Applications, http://www.fcc.gov/mb/audio/translator.html#CONFLICT (last visited Oct. 27, 2007) (

Conflicting Applications

> Where two or more translator or booster applications conflict, they are considered to be "mutually exclusive", since both applications cannot be granted without causing interference to one another. Competing applicants are encouraged to resolve their conflicts without Commission intervention. Where this is not possible, mutually exclusive conflicts will be resolved by the Commission as follows:

Because AM/FX NPRM is proposing to allow AM stations to only use translators to in effect fill-in their primary AM signal contour, this rule could be read to give AM/FX priority over many other FM translator applicants, most notably non-commercial educational entities that want an FM translator for non-fill purposes (i.e. extending the reach of their broadcast). As will be seen in our state-wide analysis, non-commercial educational entities represent the largest group of present applicants for FM translators. We recommend that the AM/FX NPRM contain additional language that clarifies that AM stations seeking fill-in FM translators have the present high priority suggested in existing FM translator rules. This will put AM stations on the same footing as primary FM broadcast stations. We discuss this in more detail in our Statewide Analysis and Cost/Benefits sections below.

Recommendation II

The proposed rules need to contain clear prioritization rules if AM/FX is to succeed. AM/FX should be treated the same as FM/FX.

Applications proposing a *fill-in* translator for a commonly owned FM primary station will have priority over all other applications. *See* 47 CFR Section 73.1233(d).

. . .

Where these criteria do not resolve the mutually exclusive conflict between non-fill-in translator applicants, the permittee will be selected on a first come / first served basis. *See* 47 CFR Section 74.1233(g). (emphasis added)

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b. Rural Community Spectrumscape – Durango Analysis

Even though the Durango area is far less densely populated (~ 14,000) than Colorado's Front Range (~ 4,000,000), it still sees considerable FM spectrum usage; see Figure 6 below. There are fewer primary FM broadcasters than along the Front Range, and numerous stations that use FM translators. In addition, like the Front Range, there are many FX applications. What stands out is the competition for 105.3 FM, where 10 applicants have filed for the primary FM license. However, in comparison to the Front Range, it would be easier for a station like KGNU, either as an FM or AM broadcaster, to find FM spectrum to set up an FM translator in the Durango area. Note that it only took one graph to represent the Rural Community spectrumscape compared to the two graphs for the Front Range spectrumscape, which reflects that rural spectrum usage is much less than urban spectrum usage.

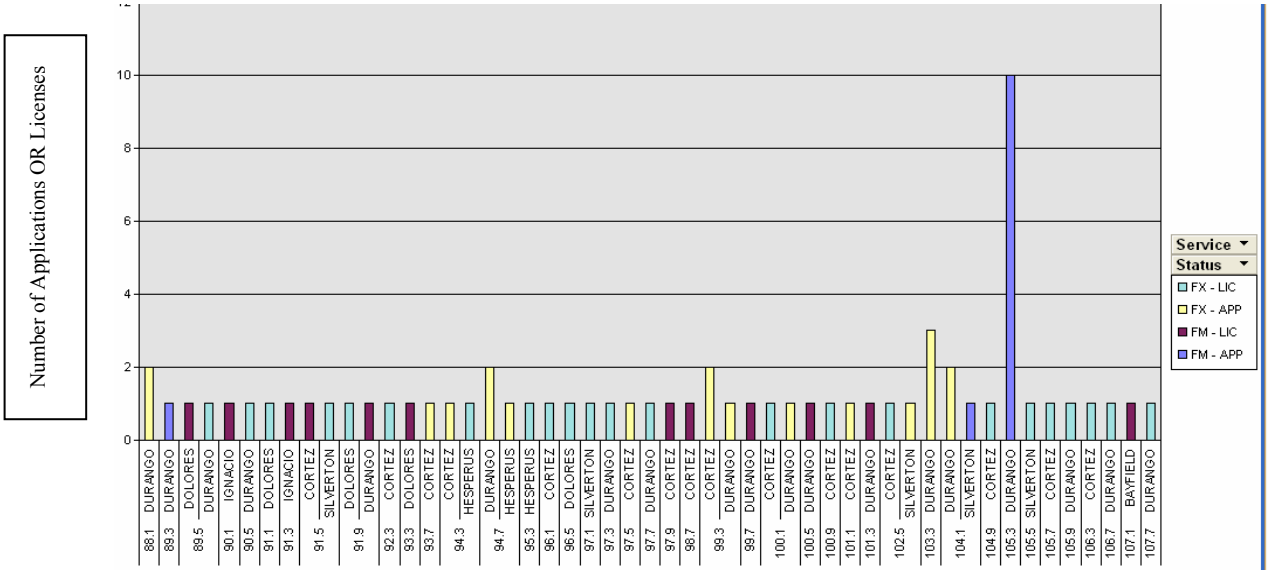

Figure 6. Durango, CO rural FM spectrumscape.

c. Statewide Spectrumscape - Entity Analysis

When turning to an analysis of FM spectrum state-wide, FM translator applications outnumber any other FM category; see Figure 7 below. FM translator applications outnumber existing FM translators, though they are comparable; both of these individual categories then outnumber existing primary FM stations by more than 2 to 1.

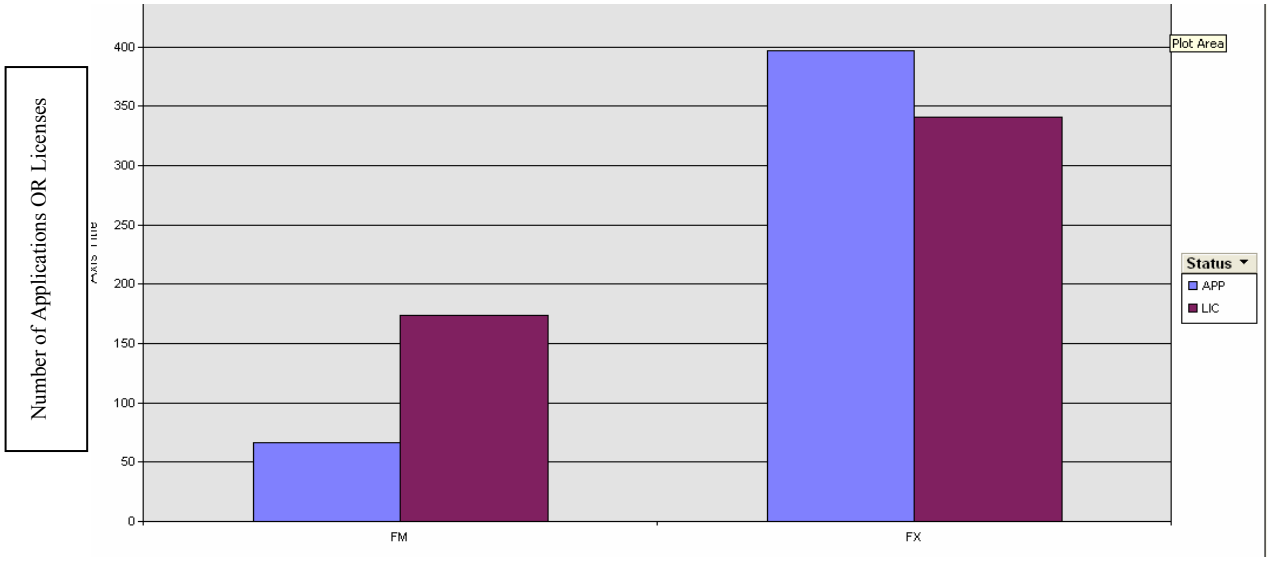

Figure 7. Colorado statewide FM spectrumscape.

Reinterpreting this same data to look at the specific entities that hold FM translator licenses or applications, several important observations can be made. First, while there are a large number of entities, only a handful of entities seem to dominate the FX applications: Edgewater Broadcasting, Educational Communications, Educational Media Foundation, Pitkin County Translator, Professional Antenna, Radio Assist Ministry, and Way-Fm; see Figures 8 and 9 below.

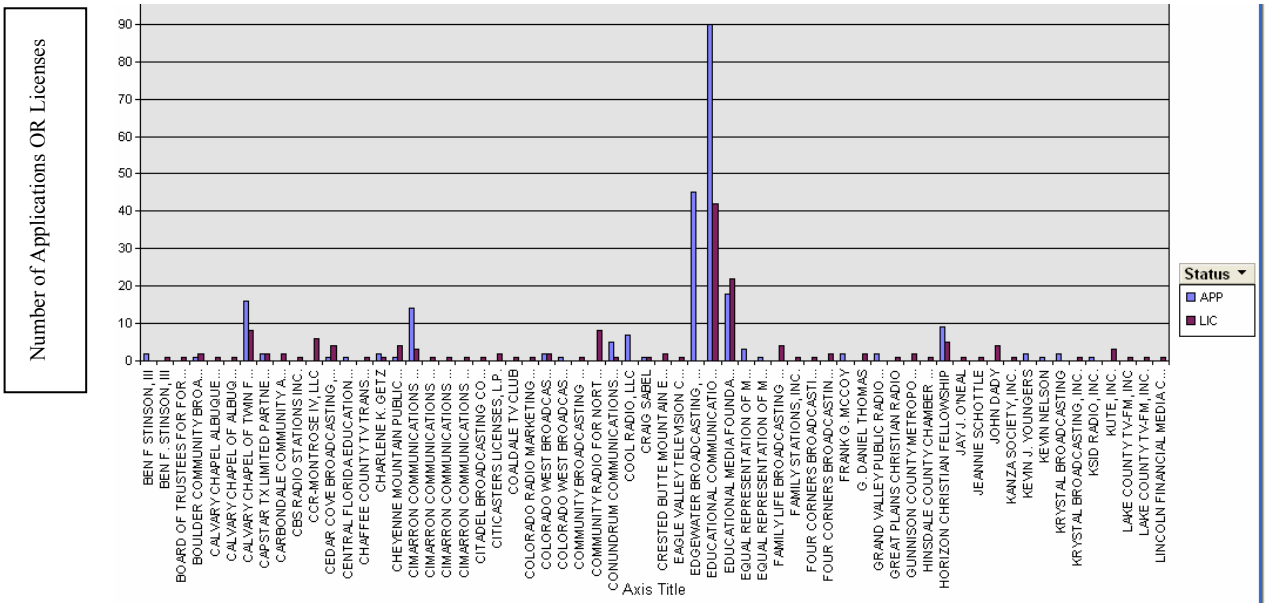

Figure 8. Colorado statewide FM spectrumscape entities A through L.

Each of these entities operates between 2 and 40 translators and has filed between 15 and 90 applications for translators. Several of these entities, Edgewater Broadcasting and Radio Assist Ministry, have filed for thousands of FM translator applications nationwide, yet have no radio experience. Research conducted by the Prometheus Radio Project and the Media Access Project has revealed these dummy corporations have the sole intent of reselling their FM translator licenses.[7] This abuse of the FM translator application process must be addressed in order for the AM/FX NPRM to succeed.

[7] *See* Media Access Project, Low Power Radio – Information about Translators, http://www.mediaccess.org/programs/lpfm/Translators.html (last visited Nov. 23, 2007).

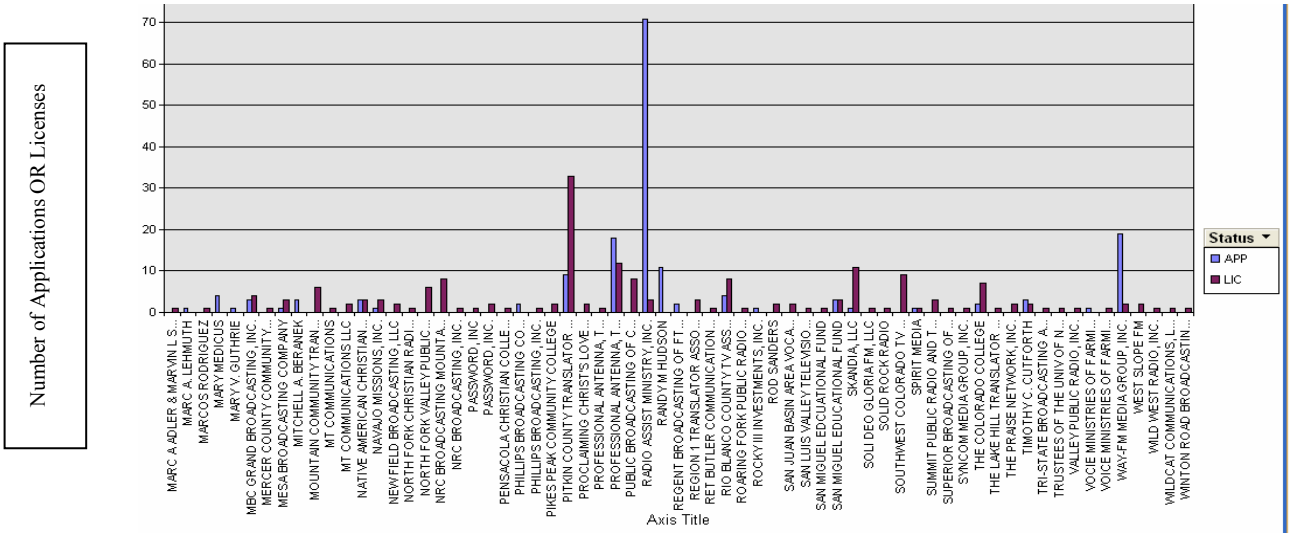

Figure 9. Colorado statewide FM spectrumscape entities M through Z.

An analysis of Educational Communication of Colorado Springs ("ECCS") provides additional insight into an entity with a large number of FX applications; see Figures 10 and 11 below. As a non-commercial broadcaster, ECCS has historically broadcast on the left end of the dial, where they have 11 FM stations and 24 FM translators; they have applications for 90 different FM translators; see Figure 10 below.

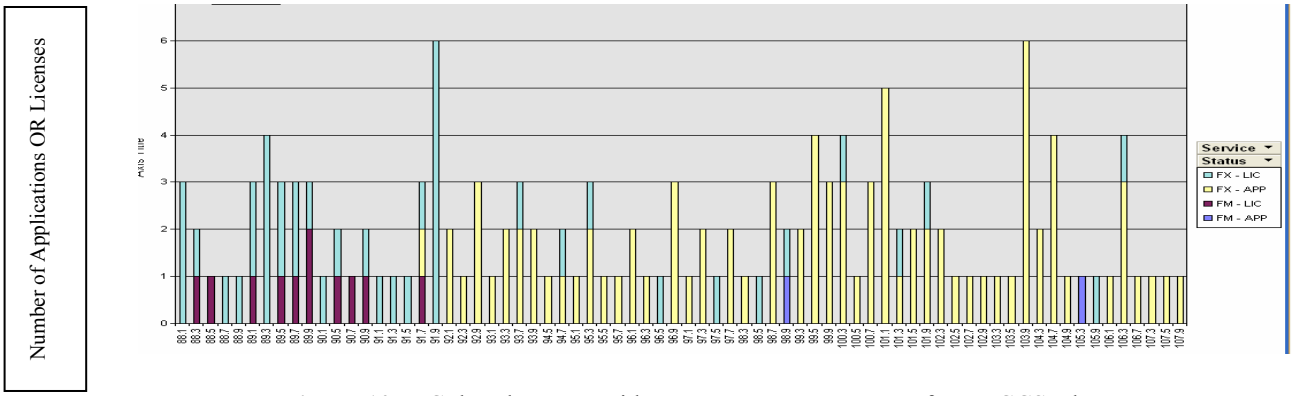

Figure 10. Colorado statewide FM spectrumscape for ECCS by frequency.

ECCS's applications are spread across the state, often in rural communities, but they have 15 applications in Colorado Springs (population ~ 360,000) and 10 in Grand Junction (population ~ 45,000); see Figure 11 below.

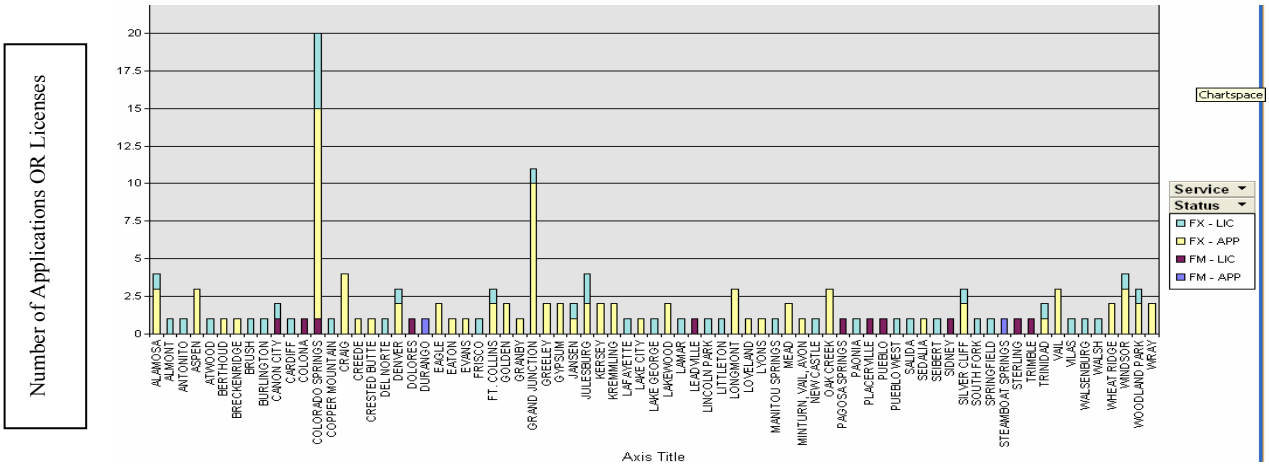

Figure 11. Colorado statewide FM spectrumscape for ECCS by community.

The AM/FX NPRM asks whether there should be a limit on the number of FM translator licenses an AM station can hold for fill-in purposes. The real problem, however, may be that a handful of "non-commercial" entities already dominating the FX spectrumscape so far, in terms of existing FX licenses and applications. At present, there are no limits on how many FX licenses an FM station can hold.[8]

[8] *See* FM Translator and FM Booster Stations Audio Division (FCC) USA, No Multiple Ownership Limits, http://www.fcc.gov/mb/audio/translator.html#MULTIPLE (last visited Oct. 27, 2007) (

> **No Multiple Ownership Limits**
>
> There are **no multiple ownership limits on the number of translator and booster stations a single entity may own**. Nor are they counted as FM stations for the purposes of the primary station multiple ownership rule, 47 CFR Section 73.3555. *See* 47 CFR Sections 74.1232(b) and (g). (emphasis added)

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Recommendation III

> The FCC should limit the number of FM translator licenses any given primary broadcast station may have to a total of ten, regardless of whether they are an AM or FM broadcaster. FM translator licenses should also be limited to actual radio broadcasters.

While focusing on how many FX licenses an AM station should be allowed to use is a worthwhile question to ask, the AM/FX NPRM must consider limiting the number of FX licenses an FM station should be allowed to use. In particular, non-commercial entities that use FM translators to create state-wide networks need thorough examination as is seen in the analysis of ECCS above. Although limiting FX licenses could negatively impact stations like non-commercial KGNU, this suggested rule change is in fact likely to help stations like KGNU by diversifying the number of entities that are able to gain access to FM spectrum for translator use. Furthermore, limiting the number of FM translator licenses a broadcaster can hold to ten will in part address the FM translator abuse problem seen with entities like Edgewater Broadcasting and Radio Assist Ministry. This suggestion is a natural extension of the FCC's recent Low Power FM 3rd Report & Order, which will limit further processing of pending FM translator applications to ten per applicant.[9]

[9] *See* Creation of A Low Power Radio Service, *3rd Report & Order & 2nd Further Notice of Proposed Rule Making*, FCC 07-204, MM Dkt. No. 99-25, ¶ 56 (Dec. 11, 2007), *available at* http://fjallfoss.fcc.gov/edocs_public/attachmatch/FCC-07-204A1.pdf.

III. The Sound Quality Issue

One critical area that the AM/FX NPRM fails to address is the issue of sound quality. Allowing AM stations to rebroadcast their AM signals using FM translators will degrade the sound quality listeners of FM radio have come to expect. This signal quality difference comes on several levels. The first is that AM radio is monaural, while FM radio is stereo. The second arises from differences between frequency and amplitude modulation. Frequency modulation is able to capture and send out more information than amplitude modulation; frequency modulation has a broader dynamic range and frequency response than amplitude modulation. Lastly, atmospheric and electrical interference can distort AM signals while not impacting FM signals.

These sound quality differences suggest additional requirements on AM radio stations who may want to use FM translators. Rather than allowing the rebroadcast of an AM signal as an FM signal, the AM/FX NPRM should modify the FM translator rules to require that AM stations broadcast a signal of comparable quality to a standard FM broadcast. Several options, already within the FM translator rules, would help facilitate this effort to maintain sound quality. With the present FM translator rules, FM stations are allowed to use other means besides picking up their over the air signal and rebroadcasting it, including microwave, phone company circuits, and dedicated fiber optic cables.[10]

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[10] *See* FM Translator and FM Booster Stations Audio Division (FCC) USA, Fill-in Translators, http://www.fcc.gov/mb/audio/translator.html#FILLIN (last visited Jan. 4, 2008) (

> *Signal Delivery to the Translator*. Generally, a primary FM station's signal is simply received at the fill-in translator's site, boosted in strength, and reradiated on the assigned translator frequency. However, **a fill-in translator may also receive a primary station's signal via any terrestrial transmission facility, including (but not limited to) microwave, phone company circuits, and**

By utilizing non-aural terrestrial transmission facilities ("NATTF"), AM radio stations could send FM quality signals to their translators, thus avoiding the spectrum degradation problem while conveying a signal that maintains the frequency response and dynamic range of an FM signal. This will potentially add cost to AM stations using FM translators.

NATTFs may in fact prove necessary for AM/FX to be viable beyond just the sound quality issue. After dark, AM radio stations have either to cut back their power or to go off the air to avoid nighttime skywave interference problems. Thus, under the present broadcasting system, there is little or no signal for an FM translator to even pick up and rebroadcast. Lowering the power of AM signal also accentuates the interference problems an AM signal faces from other electrical sources, making the argument stronger against allowing an AM station to pick up their AM signal over the air and rebroadcasting it using an FM translator. Use of NATTFs thus solves all these problems that will face AM radio stations hoping to use FM translators.

Recommendation IV

> AM stations should be required to send FM quality signals to any FM translator they utilize, rather than rebroadcasting their over-the-air AM quality signal.

> **dedicated fiber optic cable**. . . . *See* 47 CFR Sections 74.1231(b) and (c)). (emphasis added)

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IV. Costs and Benefits Analysis

a. Introduction

Currently, there are two types of licensed users of FM translators, commercial FM broadcasters and non-commercial educational (NCE) FM broadcasters. The current translator rules allow commercial FM stations to use translators as a fill-in service within their primary broadcast area; NCE FM broadcasters may use FM translators as an extension service outside of their primary broadcast area. The Notice of Proposed Rule Making would allow both commercial and NCE AM broadcasters to use FM translators for fill-in service. This section explores the effect allowing AM broadcasters to use FM translators would have on AM broadcasters, FM broadcasters, Low Power FM broadcasters, and the Commission's stated commitment to diversity, localism, and competition.

b. AM Broadcasters

The spectrumscape analysis for Colorado suggests that AM stations will likely find it difficult to receive FM translator licenses in high population areas. The cost of preparing an application which has a reasonable chance of acceptance by the FCC may not be significant.[11] These costs would include legal fees for filing and studies to select which licenses to submit applications and where to locate a translator site. If a broadcaster receives a translator license, there are costs associated with equipment and interference. The cost of translator

[11] FCC fees for construction permit and new license are about $4,000. *See* Amendment of the Schedule of Application Fees Set Forth In Sections 1.1102 through 1.1107 of the Commission's Rules, Order, FCC 06-131, GEN Dkt. No. 86-285 (Aug. 30, 2006), *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-06-131A1.pdf. Private fees for frequency search and application preparation are about $1,200. *See* Sterling Communications, Inc. – Steps to Establishing a Translator, http://www.christianradio.com/sterling/transinv.html (last visited Jan. 6, 2008).

equipment is not excessive[12] and will likely not deter use of FM translators by AM broadcasters. The interference costs stem from the very low priority given to FM translator signals if there is any interference with a primary broadcast signal. In these instances, the translator licensee will often choose to change translator location, frequency, or both, in order to avoid interference. As discussed in Section I, KGNU experienced this first hand with their Fort Collins, CO translator, and eventually chose to shut down their translator. As KGNU experienced, the financial and logistical costs of translator operation are often substantial and may be burdensome. These are costs which are inherent in each translator application, the costs are compounded if an AM broadcaster needs many translators to provide full coverage of its daytime contour at night.

The footprint of the proposed 250 W max power for translators would require many translators to supply near total fill-in service for nighttime operation of non-clear channel AM stations.[13] In rural areas with low population and spectrum usage (such as Durango, Colorado), establishing a network of fill-in FM translators may not be too difficult for AM broadcasters, since many frequencies are available. However, in urban areas with high population and spectral density, there will often not be enough spectrum available in the FM band to build a fill-in translator network for *one* AM station. The situation is further made worse by the

[12] *See* Radio Station Construction Costs, http://www.ntia.doc.gov/ptfp/application/equipcost_radio.html (last visited Oct. 30, 2007) (estimating the cost of translator equipment to be around $85,000).

[13] Assuming a 100,000 watt transmission is receivable within a radius of 60 miles from the transmission tower and a 250 watt transmission is receivable within a radius of 25 miles, then approximately six 250 watt translators would be necessary to cover the area of one 100,000 watt primary broadcaster.

large number of current conflicting FM translator applications in urban areas, such as Colorado Springs, Colorado. (See, *e.g.*, Figure 5, above.)

In light of the spectral congestion problem, we suggest the FCC adopt rules which would allow AM broadcasters to fill-in their daytime contour at night using a minimum number of FM translators. This could require licensing FM translators to operate at powers exceeding the current limit of 250 W in order to reach listeners within the day-time AM contour with as little as one translator. This rule would increase the night-time diversity of broadcasts available to listeners while also reducing spectral congestion and the number of conflicting license applications.

c. Current FM Licensees

The proposal allowing AM broadcasters to use FM translators will impact three types of current FM licensees: FM translator licensees, Low Power FM licensees, and primary FM broadcasters. Primary AM broadcasters applying for FM translator licenses will increase competition for FM translator licenses, but will only likely increase the total amount of interference in rural areas where spectral density (and hence current interference) is low.

As the analysis in Section II shows, competition for translator licenses is already very strong in most urban areas, with conflicting applications for many frequencies. Primary AM broadcasters applying for FM translator licenses will increase the competition for those licenses. This increased competition for translator licenses will directly affect commercial and NCE FM primary broadcasters applying for translator licenses in these areas. Increased applications

will make it less likely that FM primary broadcasters will be able to obtain translator licenses. However, because non-clear channel primary AM broadcasts are not available at night to many listeners, licensing even some of these broadcasters to use FM translators will increase the diversity of voices at night. We believe this relatively small impact on FM broadcasters seeking translator licenses is more than offset by the public benefit gained through increased diversity of voices at night.

Current FM translator license holders, especially in rural areas, will face increased interference problems if the FCC licenses more FM translators by allowing their use by AM broadcasters. As the experience of KGNU in Fort Collins, CO shows (see Section I), primary FM broadcasters operating FM translators already face significant interference problems in high density urban areas. The affect of increased interference due to AM broadcasters use of FM translators will therefore be most acute for current rural FM translator licensees. Rural areas have much less spectral congestion and thus the addition of *any* translator licensees in rural areas will increase interference. A rule allowing higher power FM translators for AM broadcasters for fill-in service may help to alleviate this problem, as discussed above. Therefore, we believe that the increased interference which may be experienced by current rural FM translator licensees will be offset by the increased voice diversity at night.

Low Power FM ("LPFM") advocates, such as the Prometheus Radio Project,[14] insist that licensing more FM translators will reduce the spectrum

[14] *See* Comments of Prometheus Radio Project in opposition to Petition for Rulemaking of the National Association of Broadcasters to Permit AM Radio Stations' Use of FM Translators, RM-

available to LPFM broadcasters. However, licensed LPFM stations in Colorado (and the U.S.) are currently located in rural areas with low spectral congestion, such as Idaho Springs.[15] It is true that increasing the number of FM translators in use in rural areas by allowing AM broadcasters to use them will decrease the spectrum available for LPFM. However, since these stations are located in low spectral density regions, it is unlikely that LPFM will not be able to attain spectrum in these areas also. Therefore, the impact on LPFM as a whole is likely to be minimal.

Primary FM broadcasters may experience interference from AM broadcaster's use of FM translators. However, primary FM broadcasters have the highest priority with regard to interference, and may force relocation of the FM translator site, frequency, or both. Additionally, in spectrally congested urban areas where a large number of translators may already be operating, the addition of a few additional AM broadcasters using FM translators for fill-in service will not materially impact primary FM broadcasters. Since primary FM broadcast signals have the highest priority in the FM band, the interference costs would likely not exceed notifying the FCC and offending translator signal of the interference. We believe that these minimal costs to primary FM broadcasters are outweighed by the benefit of increased diversity of voices during nighttime.

11338 (Aug. 24, 2006), *available at* http://fjallfoss.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=6518440123.

[15] *See* Low Power FM Licensed Coverage in the Continental United States 88.1 through 107.9 MHz, Audio Division, FCC Media Bureau (June 28, 2006), *available at* http://www.fcc.gov/Bureaus/MB/Databases/fm_tv_service_areas/regional/20060628-LowPowerFMLicensedCoverage-ContinentalUSA.pdf.

d. Benefits to the Public Interest

Allowing AM broadcasters to use FM translators will serve the public interest by increasing the diversity of programming available to listeners at night. Since the license granted AM radio stations[16] requires they power down or go off the air at night, the number of listeners who may receive these signals at night is much lower than during the day. Allowing AM broadcasters to use FM translators will increase the number of listeners who can receive the broadcast at night. Therefore, in areas where the FM translator signal is available, but not the primary AM signal, the effective number of broadcasts available to listeners is increased. The increased number of available broadcasts means more diverse available programming, which is in the public interest.

We urge the FCC to allow non-commercial educational (NCE) AM broadcasters to use FM translators outside the primary AM day-time contour in order to further promote program diversity in underserved areas. The adoption of such a rule would allow NCE AM broadcasters, such as KGNU, to extend their broadcasts to underserved areas outside their primary contour. Increasing the diversity of programming available to listeners outside high density urban areas is in the public interest and would be encouraged by such a rule.

Since NCE broadcasters often receive substantial portions of their operating budgets from listener donations, increasing the potential number of listeners for such stations is in the public interest. The more listeners served by an NCE broadcaster, the more donations the broadcaster is likely to receive. Increased donations can help support further FM translator use by the station,

[16] Except clear-channel AM stations.

allowing programming to reach even more listeners. Additionally, increased donations may be used to produce or purchase more programming. Therefore, this proposal increases the number of broadcasts listeners may receive and the diversity of programming on those broadcasts and is squarely in the public interest.

Further, as the National Association of Black Owned Broadcasters and the Minority Media and Telecommunications Council point out,[17] a proposal such as this which increases the value of the AM band inherently promotes diversity in station ownership. Since there are more minority owned AM stations than FM stations, this proposal promotes minority ownership while remaining on its face race and gender neutral.[18]

e. Conflicting Translator Applications

As the spectrum analysis of Section I shows, there are a significant number of conflicting applications for FM translators. Allowing AM broadcasters to use FM translators will further increase the number of conflicting applications, thus the FCC should implement rules to choose between conflicting applications which maximize the Commission's stated commitment to localism, diversity of voices and public interest programming. Localism may be encouraged by giving higher priority to translator applications which will carry a local[19] signal. Such a rule would favor translator applications for fill-in service, currently used by both

[17] *See* Reply Comments of the National Association of Black Owned Broadcasters and the Minority Media and Telecommunications Council to the Petition for Rulemaking of the National Association of Broadcasters to Permit AM Radio Stations' Use of FM Translators, RM No. 11338 (Sept. 6, 2006), *available at* http://fjallfoss.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=6518444219.

[18] *Id.* at 2-3

[19] There are many ways to define local, but perhaps the easiest is to give priority to the application with the smallest distance between the proposed translator site and the primary signal site.

commercial and non-commercial educational FM broadcasters. When considering conflicting local translator applications, the Commission should prioritize applications which will maximize diversity and public interest programming, both discussed below.

As discussed in Section IV d above, diversity may be encouraged by allowing AM broadcasters to extend their night-time broadcast area through use of FM translators. Diversity may also be increased through non-commercial educational FM broadcasters' use of translators to extend their signals beyond their primary broadcast area. When deciding between these two types of conflicting translator applications, the Commission should prioritize those which would carry local signals. Therefore, the Commission should give priority to AM broadcasters applying for fill-in translator service when considering conflicting FM translator applications with non-commercial educational FM broadcasters.

Public interest broadcasting may be encouraged through prioritization of non-commercial educational broadcasters when considering conflicting FM translator applications. NCE broadcasters operate on both the AM and FM bands, and use translators for both fill-in and extension service. To encourage localism, NCE broadcasters utilizing FM translators for fill-in service should be given priority over NCE broadcasters utilizing FM translators for extension service. Localism may also be encouraged in conflicting applications between NCE broadcasters applying for translator extension service by giving higher priority to applicants with a proposed translator site closest to their primary broadcast site. To encourage diversity of voices at night, priority should be given to AM

applicants when considering conflicting applications between NCE broadcasters, all other aspects (commercial, non-commercial, fill-in, extension localism, etc.) being equal.

V. Recommendations

a. The FCC should allow AM stations to use FM translators, with a few conditions.

We conclude that the proposed rule changes to allow AM broadcasters to use FM translators will benefit the public interest by increasing the diversity of broadcasts available during nighttime in many areas. The proposed rule change may affect other users of FM spectrum in so much as there will be more competition for spectrum licenses. However, the Commission should amend the rules in such a way as to ensure signal quality of the FM band, provide effective notice to AM broadcasters of the difficulties in using FM translator licenses, and amend the existing translator rules to give priority to the highest translator use.

b. The FCC needs to address the signal quality issue to insure that AM/FX doesn't degrade the FM band.

The Commission should amend the translator rules to allow AM broadcasters to use FM translators *only* if the signal is provided to the translator in a manner *other than aurally* (over-the-air). Current technologies available for such transmission include infrared links, phone or cable company links, and dedicated wires (such as fiber-optic cable). This rule is necessary to preserve the signal quality of the FM band which listeners are accustomed. As explained in Section III above, AM signals are more susceptible to interference and

degradation than are FM signals. Therefore, translation of a weakened (due to nighttime power-down) AM signal onto FM will result in severely reduced signal quality if the FM translator is sufficiently distant from the AM source.

c. The FCC needs to provide effective notice to AM broadcasters regarding potential problems they might face using FX.

The Commission should amend the translator rules to provide effective notice to AM broadcasters of the status of FM translators with regard to interference and the circumstances under which a FM translator is required to cease broadcasting. As explained in Section I above, broadcasters often have to move translator sites, change translator frequencies, or both in order to avoid interference with a primary broadcaster. Many broadcasters may decide that they cannot afford to use a translator if they expect their experience to be like that of KGNU's experience using a translator in Fort Collins, CO. In that case, KGNU decided to cease operation of its translator due in part to interference issues with a primary FM broadcaster. Since one aim of the proposed rule changes is to increase the viability of the AM band, it is unproductive for AM broadcasters to start use of a translator without knowing the inherent risks involved.

To provide effective notice, we propose that a notice section be added to the FM translator license application form summarizing in plain language the very low priority of FM translators with regard to interference and the consequences of causing interference with a primary broadcast signal. The notice should be prominently displayed and so that all broadcasters may easily become aware of the inherent risks. Further, the notice should reference the specific applicable

rules and regulations so that broadcasters may make a more thorough inquiry into the matter before applying for a translator license. We believe that a notice of this type will help ensure the viability of AM broadcasters and help to reduce the number of translator applications, which has become excessive.

d. The FCC must address the excessive number of existing FX applications dominated by a few entities in order to make AM/FX viable.

In order for AM broadcasters in urban areas to be able to take advantage of the proposed rule changes, the Commission should amend the priority rules for conflicting translator applications such that local primary broadcasters have priority. As explained in Section II, in Colorado and elsewhere several national entities dominate the applications for translator licenses. These non-commercial educational broadcasters are not restricted to use of translators as fill-in service and may create large national networks of translators from a single primary broadcast. We agree with other commenters[20] that the translator licensing rules need to be adjusted to prioritize local broadcasters.

We urge the Commission to amend the translator rules to give fill-in FM translator license applications by AM or FM primary broadcasters priority over FM translator license applications by distant primary broadcasters. Other comments have also suggested the Commission establish an improved hierarchy, such as that based on license type and broadcast power.[21] We believe that a

[20] *See* Comments of George Simmons to Petition for Rulemaking of the National Association of Broadcasters to Permit AM Radio Stations' Use of FM Translators, RM-11338 (Aug. 17, 2007), *available at* http://fjallfoss.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=6519611985.

[21] *See* Comments of Larry Langford to Petition for Rulemaking of the National Association of Broadcasters to Permit AM Radio Stations' Use of FM Translators, RM-11338 (Aug. 20, 2007),

priority scheme which also prioritized localism is superior to one based on power and license type alone. However, any action by the Commission to improve the prioritization rules for conflicting applications should both encourage more localism and prioritize AM primary broadcasters such that they may actually take advantage of the proposed rules changes.

In order to lessen spectral congestion in urban areas, the Commission should also consider amending the translator regulations to allow AM broadcasters using FM translators to operate above the current 250 W limit. As discussed in Section IV, a large number of FM translators would be necessary to cover the daytime contour of many AM stations. The Commission could license AM broadcasters operating a fill-in FM translator service to use a translator power which would substantially cover the entire daytime contour. This would allow AM broadcasters to effectively use one translator as fill-in and lower the number of translator license applications as well as make much more efficient use of the spectrum. More efficient spectral use would allow more broadcast diversity by leaving more spectrum available for other broadcasters.

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available at
http://gullfoss2.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf&id_document=6519611680.